

Appl. No. 10/706,644  
Amendment and Response dated October 24, 2006  
Reply to Office Action of July 27, 2006

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### REMARKS

Applicant acknowledges receipt of the Office Action dated July 27, 2006.

#### Status of the claims

In this reply, Applicant canceled Claims 20 & 49; amended Claims 17-19, 42, 48, 50, 52 & 61-63, and added new Claims 66-67. Claims 1-16 and 28-38 were previously canceled. All amendments to such claims are supported by the Application as filed.

Amendments to Claim 17 will be discussed in detail below.

Claim 18 was amended to narrow the second metal composition, so that the alloy comprises rhodium and rhenium. This amendment is supported by the application as filed, for example by at least Claims 2 & 18 and catalyst Example 8.

Claim 19 was amended to provide a proper antecedent basis to the language "at least one second metal" used in Claim 17 in such claim. Claim 19 narrows the second metal composition, so that the alloy comprises rhodium and ruthenium. This amendment is supported by the application as filed, for example by at least catalyst Examples 1-3, 5-6 & 9.

Claim 42 was amended to provide additional embodiments for the second metal composition. Claim 42 dependent from Claim 17 requires that the second metal in the rhodium alloy further comprises another "*metal selected from the group consisting of tungsten, niobium, tantalum, zirconium and mixtures thereof*", so as to provide a combination of three elements in a 'AD' formulation (to use the analogy provided thereabove) with  $D=D_1D_2$ , where A is Rhodium; D comprises a metal  $D_1$  selected from ruthenium, rhenium, niobium, tantalum, or mixtures thereof; and further comprises a metal  $D_2$  selected from tungsten, niobium, tantalum, zirconium or mixtures thereof. This amendment is supported by the application as filed, for example by at least paragraph [0030] on Page 8 of the specification as filed.

Amendment to Claim 48 incorporates the limitation of Claim 49 which is now canceled.

Claim 50 was amended to correct a typographical error (i.e., add a comma after 'Lu').

Claim 52 was amended to remove the CO selectivity limitation which was incorporated into Claim 17 from which it depends.

Claims 61-63 were amended to specify that the unit in the metal surface area refers to square meter 'of metal', and not the surface area of a carrier or support. This amendment simply states what

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was clearly intended in the terms 'metal surface area'.

As a result of such claim amendments, Claims 17-19, 21-27, 39-48 & 50-67 are currently pending and under examination, in which Claim 17 is an independent claim from which Claims 18, 19, 21-27, 39-48, 50-55 and 66-67 depend, and Claim 56 is an independent claim from which Claims 57-65 depend.

#### **Rejections over *Schaddenhorst***

Claims 17-27, 39-47, 52-56 & 59-65 were rejected under U.S.C. 102(e) as anticipated by, or in the alternative, under 35 U.S.C 103(a) as obvious over U.S. Patent No. 6,702,960 by Schaddenhorst et al. (hereinafter '*Schaddenhorst*').

In view of the present amendment to the claims, the rejection is respectfully traversed, as Applicant submits that *Schaddenhorst* does not teach nor suggest each and every limitation of such claims, as is required for a *prima facie* case of anticipation [See MPEP 2131: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)"] and a *prima facie* case of obviousness [see MPEP 2143.03: "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)"].

The rejections of independent Claims 17 and 56 and their respective dependent claims over *Schaddenhorst* will be addressed separately below.

#### **Rejection of Claim 17 and its dependent Claims 2-27, 39-47 & 52-55 over *Schaddenhorst***

In this response, Claim 20 was cancelled so its rejection is now moot.

Applicant amended Claim 17 to recite "*a metal catalyst material comprising a rhodium alloy comprised of rhodium and at least one second metal selected from the group consisting of ruthenium, rhenium, niobium, tantalum, and mixtures thereof*". Such amendments of Claim 17 are supported by the application as filed for example, by at least originally filed Claim 18, paragraph [0013] on Page 3 and paragraph [0030] on Page 8 of the specification as filed.

Furthermore, Claim 17 was amended to further incorporate a limitation from Claim 52 (from which it was removed) to recite "a carbon monoxide selectivity equal to or greater than 80 %" while "under operating conditions comprising a pressure of at least greater than or equal to 2

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atmospheres". Such amendment of Claim 17 is supported by the application as filed for example, by at least Figure 3 and paragraph [0034] on page 9 of the specification as originally filed.

*Schaddenhorst*, as a whole, teaches the use of a rhodium-iridium alloy catalyst for the catalytic partial oxidation. *Schaddenhorst* further discloses that the "rhodium and iridium may be associated with at least one inorganic metal cation in such a way that the inorganic metal cation is present in intimate association, supported on or with the rhodium and iridium [...].The cation is selected from Groups IIA, IIIA, IIIB, IVA and IVB of the Periodic Table and the lanthanides, for example Al, Mg, Zr, Ti, La, Hf, Si and Ba, of which Zr is preferred. The cation is preferably in the form of its oxide." (See *Schaddenhorst* in Col. 3 Lines 12-19) Thus, *Schaddenhorst* discloses two possible alloy compositions: 'AB' and 'ABC' where A is Rhodium; B is Iridium and C is a cation selected from Groups IIA, IIIA, IIIB, IVA and IVB (preferably in the form of its oxide).

On the other end, Claim 17 of the present application recites a composition of type: 'AD', where A is Rhodium and D comprises at least one element selected from ruthenium, rhenium, niobium, tantalum, or mixtures thereof, which do not include iridium and do not belong to Groups IIA, IIIA, IIIB, IVA and IVB. Thus, the 'AD' combination in the present Claim 17 is not taught by the *Schaddenhorst* reference. Furthermore, there is no suggestion nor motivation in *Schaddenhorst* that any of these second metal elements (i.e., ruthenium, rhenium, niobium, tantalum or mixtures thereof) could be used *in lieu of* iridium (i.e., replace B with D) or could be used in addition to the rhodium-iridium combination (i.e., add D to 'AB').

Secondly, there is no disclosure in *Schaddenhorst* about values of carbon monoxide (CO) selectivity. *Schaddenhorst* discloses methane conversion values with a catalyst comprising rhodium, iridium and zirconium in the example section (see *Schaddenhorst* in Figure; Col. 5 Lines 60-67; Col. 6 lines 20-27 & 43-51), but *Schaddenhorst* fails to disclose any product selectivity data. It is not known to Applicants nor to the artisan why *Schaddenhorst* failed to disclose such selectivity data since CO and H<sub>2</sub> can be presumably monitored with the same or a similar method used for methane. Thus, Applicant contends that a person of ordinary skill in the art having access to *Schaddenhorst* could not help but draw a negative inference from *Schaddenhorst*'s failure to include selectivity values or ranges.

The sole teaching in *Schaddenhorst* concerning product selectivity of the process of their invention using the 'ABC' alloy formulation (as described above) was found by Applicant in the following passages in *Schaddenhorst* reproduced below:

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"The rhodium and iridium is essentially present as an intimate admixture with the metal cation or as layers which resemble an admixture. Preferably, the admixture is present substantially as a single layer or as separate clusters. [...]. The thickness of a layer of metal cation as hereinbefore defined may be selected for optimum effect and may be determined by measurement of the selectivity of reaction and the like. Thickness is conveniently in the order of microns. "(see Col. 3, lines 33-36 & 40-44)

One having ordinary skill in the art reading these passages in *Schaddenhorst* would infer that the thickness of a layer of metal cation and the selectivity of reaction are correlated and that an optimum exists between these two features. *Schaddenhorst*'s teaching also implicitly conveys that a lack of metal cation in the alloy composition (and *a fortiori* a lack of its layer) may lead to not-optimal effect and/or unacceptable selectivity of reaction. As such, an artisan would not be motivated to eliminate the metal cation 'C' from the 'ABC' composition to arrive to the 'AD' alloy formulation used in the present claimed process, and further would have no expectation of success in obtaining a CO selectivity of 80% or greater with such 'AD' alloy (i.e., without the presence of a layer of the metal cation 'C'), and thus would not be to arrive at the present claimed process as recited in Claim 17.

Thus, *Schaddenhorst* does not teach or suggest each and every limitation in currently-amended Claim 17 which is required for anticipation and obviousness (see MPEP 2131 and MPEP 2143.03), and furthermore there is no motivation to modify the teaching of *Schaddenhorst* to provide what is missing from *Schaddenhorst* with a reasonable expectation of success to arrive to the present Claim 17 (see MPEP 2143.01 and 2143.02).

For at least these reasons, Applicant believes that Claim 17 is patentable over *Schaddenhorst*.

As for the other rejected claims dependent from Claim 17, Claim 20 was cancelled so its rejection is now moot. Claims 18, 19, 42 & 52 were amended and these amendments were previously described, and all of the amendments to such claims are supported by the application as filed. Claims 18, 19, 21-27, 39-47 & 52-55 which are dependent upon, or ultimately dependent upon, independent Claim 17, are considered patentable over *Schaddenhorst* for at least the same reasons as Claim 17. Applicant respectfully requests the Examiner to withdrawn such rejection on Claims 17-19, 21-27, 39-47 & 52-56 over *Schaddenhorst*.

***Rejection of Claim 56 and its dependent Claims 59-65 over Schaddenhorst***

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Claim 56 is an independent claim which, among all of the limitations, requires a CO and hydrogen selectivities of 80% or greater at an operating pressure of at least greater than or equal to 2 atmospheres, and further requires that the rhodium alloy composition is supported on a modified alumina.

Applicant submits that *Schaddenhorst* fails to teach or suggest that the rhodium alloy composition is supported on a modified alumina as recited in Claim 56. Indeed, although *Schaddenhorst* supplies a list of acceptable supports (see relevant passage in *Schaddenhorst* in Col. 2 Lines 44-58), *Schaddenhorst* does not provide modified alumina as a possible carrier material, and further offers no guidance to an artisan towards the selection of a modified alumina from that list. To the contrary, *Schaddenhorst* seems to encourage the artisan to use a zirconia-based carrier material for the alloy compositions.

Furthermore, as stated above, there is no disclosure in *Schaddenhorst* about values of carbon monoxide and hydrogen selectivity. *Schaddenhorst* discloses methane conversion values in the example section (see *Schaddenhorst*'s Figure) but fails to disclose any selectivity data. As previously argued, Applicant contends that a person of ordinary skill in the art having access to *Schaddenhorst* would draw a negative inference from the lack of such disclosure, and would not be motivated to eliminate the metal cation 'C' from the 'ABC' composition as there would not be a reasonable expectation of success in obtaining CO and hydrogen selectivity of 80% or greater with the use of either of 'AB' or 'AD' alloy formulations (i.e., without the presence of a layer of the metal cation 'C') to arrive at the present claimed process of Claim 56.

As such, Applicant believes that Claim 56 is patentable over *Schaddenhorst*. Each of Claims 59-65, which are dependent upon independent Claim 56, carries all of the limitations from such allowable claim. As such Claims 59-65 are considered patentable over *Schaddenhorst* for at least the same reasons as Claim 56. Applicant respectfully requests the Examiner to withdraw such rejection.

#### Rejections over *Grieve*

Claims 17-27 & 39-65 were rejected under U.S.C. 102(e) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over *Grieve*. The rejection is respectfully traversed.

Claim 20 and 49 were canceled so the rejection on such claims is now moot.

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Claim 17 is an independent claim from which rejected Claims 18, 19, 21-27, 36-48 & 50-55 depend. Claim 17 is currently amended to recite a carbon monoxide (CO) selectivity of 80% or greater at a pressure of at least greater than or equal to 2 atmospheres.

Claim 56 is an independent claim from which rejected Claims 57-65 depend.

*Grieve*, as a whole, teaches processes for operating and removing contaminants from reformer system, in which the reformer system comprises a catalyst material disposed on and/or throughout a reformer catalyst substrate, where the catalyst material "include[s] metals such as platinum, palladium, rhodium, iridium, osmium, ruthenium, tantalum, zirconium, yttrium, cerium, nickel, copper, and the like, as well as oxides, mixtures and alloys comprising at least one of the foregoing materials" (see *Grieve* in Abstract and Col.10 lines 22-26).

It is noted that nickel is listed among the metals for the catalyst material in *Grieve*. However, both Claims 17 and 56 require a rhodium alloy which is substantially free of nickel. There is no teaching, nor suggestion from *Grieve* to exclude nickel in the catalyst composition.

Moreover, *Grieve* fails to disclose a minimum selectivity of 80% for CO as required in Claims 17 and 56. Furthermore, there is no disclosure nor suggestion of obtaining a selectivity of 80% or greater for hydrogen and a hydrocarbon conversion of 80% or greater, as recited in Claim 56.

There is no mention of operating pressure in the *Grieve* disclosure. The reformer operation of the reformer system is disclosed in *Grieve* as being useful in conjunction with solid oxide fuel cells (SOFC). (See *Grieve* in Col.11 Lines 1-2). So it is very likely that *Grieve* envisions operating the reformer system at a pressure which is compatible with a SOFC which is generally operated at about atmospheric pressure. At the very least, if *Grieve* intended for the reformer system to be run at super-atmospheric pressures, a disclosure covering a range of pressure would have certainly been included. Any suggestion of such modification of *Grieve* (i.e., operation at pressure of at least greater than or equal to 2 atmospheres) is conspicuously absent in *Grieve*. In attempting to arrive at Applicants' claimed process of Claims 17 and 56, one cannot simply ignore the likelihood that *Grieve* omitted to disclose an operating pressure (and particularly a super-atmospheric operating pressures of at least greater than or equal to 2 atmospheres) in the reformer systems not by mere omission, but because they did not intend to operate at pressures at or above 2 atmospheres. It can thus be deduced that an operating pressure of at least greater than or equal to 2 atmospheres is not disclosed, nor envisioned by *Grieve*.

Thus, for all of the stated reasons above, *Grieve* does not teach or suggest each and every

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limitation of Claim 17 and of Claim 56, which is a criteria that must be met for *prima facie* anticipation and obviousness (see MPEP 2131 & 2143.03), and furthermore there is no motivation to modify the teaching of *Grieve* to provide the missing limitations with a reasonable expectation of success to arrive to the present claimed processes covered by Claims 17 and 56 (see MPEP 2143.01 & 2143.02).

For at least the reasons stated above, Applicant believes that independent Claims 17 and 56 are patentable over *Grieve*. As for the rejected Claims 18, 19, 21-27, 39-48, 50-55 & 57-65, each of Claims 18, 19, 21-27, 39-48 & 50-55 (dependent upon independent Claim 17) and each of Claims 57-65 (dependent upon independent Claim 56) carries all of the limitations of the allowable claim from which they depend. As such, Claims 18, 19, 21-27, 39-48, 50-55 & 57-65 are considered patentable over *Grieve* for at least the same reasons as stated for Claims 17 and 56. Applicant respectfully requests the Examiner to withdrawn such rejection.

**Rejections over *Schaddenhorst* in view of *Grieve***

Claims 48-51, 57 & 58 were rejected under 35 U.S.C 103(a) as obvious over *Schaddenhorst* in view of *Grieve*. The rejection is respectfully traversed.

In this reply, Claim 48 is amended to incorporate the limitation of Claim 49. Claim 49 is then canceled and its rejection is now moot. Applicant will thus address the rejection on Claims 48, 50-51 & 57-58.

The Examiner has used *Grieve*'s teaching about the combination of cerium with noble metals in the catalyst composition of *Schaddenhorst* to reject these claims.

As stated above in the arguments responding to the separate rejections over *Schaddenhorst* and over *Grieve*, Applicant has highlighted at least two missing elements from the overall teaching of *Schaddenhorst* and highlighted at least three missing elements from the overall teaching of *Grieve*, which distinguish the claimed processes of Claim 17 and Claim 56 from which rejected Claims 48, 50-51 & 57-58 respectively depend.

Applicant submits that neither *Schaddenhorst* nor *Grieve* teach or suggest a CO selectivity of 80% or greater under an operating pressure of at least greater than or equal to 2 atmospheres. Thus, the combination of *Schaddenhorst* with *Grieve* does not provide all of the limitations of Claims 17 and 56 (as required by MPEP 2143.03).

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As such, Applicant believes that independent Claims 17 and 56 are patentable over the combination of *Schaddenhorst* with *Grieve*. Since each of Claims 48 & 50-51 (ultimately dependent upon independent Claim 17) and Claims 57-58 (ultimately dependent upon independent Claim 56) carries all of the limitations of such patentable claim from which they depend, Claims 48, 50-51 and 57-58 are considered patentable over the combination of *Schaddenhorst* with *Grieve*. Applicant respectfully requests the Examiner to withdrawn such rejection.

#### Rejections over *McShea*

Claim 17 and its dependent Claims 18, 21-27, 39-47 & 52-55 were rejected under U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C 103(a) as being obvious over U.S. Patent No.4,863,707 by *McShea, III et al.* (hereinafter '*McShea*'). The rejection is respectfully traversed.

The Examiner states that *McShea*, as a whole, teaches a process for the production of synthesis gas employing a catalyst comprising an alloy of rhodium with either platinum or palladium, and that further the catalyst may further comprise a group VII metal, which would include rhenium. (See *McShea* in Col.7 lines 28-36).

However, *McShea* fails to disclose a CO selectivity of 80% or greater under an operating pressure of at least greater than or equal to 2 atmospheres, as recited in Claim 17. Indeed, *McShea* does not explicitly disclose a CO selectivity value or range. Some autothermal reforming process data (including the molar flow of methane in the inlet stream and the molar flow of methane and CO in the exit stream) are provided in the Table located in *McShea* Col. 20. It is unclear to Applicant which reforming catalyst formulation was used in these Examples 4 and 5; but for evidenciary support, one can estimate a CO selectivity based on the following equation:

$$S(\text{CO}) = \frac{[\text{CO}_{\text{out}}]}{[\text{CH}_4_{\text{in}}] - [\text{CH}_4_{\text{out}}]} \times 100\%$$

where S(CO) is the estimated CO selectivity;  $[\text{CH}_4_{\text{in}}]$  is the methane molar flow in inlet stream;  $[\text{CH}_4_{\text{out}}]$  is the methane molar flow in exit stream;  $[\text{CO}_{\text{out}}]$  is the molar flow of CO in exit stream. Applicant estimated the CO selectivity for Examples 4 & 5 at 35 atmospheres and 67.7 atmospheres respectively to be: 61.0% and 57.6%, much below the recited CO selectivity of 80% or greater as recited in Claim 17.

Furthermore, *McShea* discloses the poor performance of the rhodium-palladium and



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rhodium-platinum combinations for the conversion of methane, compared to that achieved with the palladium-platinum combination, as shown in Table I-A in *McShea* Col. 8, where the methane conversion obtained at about atmospheric pressure varied from 1 to 12% with the rhodium-palladium and rhodium-platinum combinations.

As for the obviousness rejection, since *McShea* discloses the reduced effectiveness of such rhodium-palladium and rhodium-platinum combinations, *McShea* would have led the artisan to favor of the palladium-platinum combination and would have led the artisan away from the use of rhodium, especially without the combination of palladium and platinum. Thus, it can be inferred from *McShea* that, if rhodium is used, both palladium and platinum are required to be used with it for good catalytic performance. As such, *McShea* does not offer any suggestion to remove palladium (Pd) and/or platinum (Pt) in their combination with rhodium to replace either or both of Pd and Pt with a second metal selected from ruthenium, rhenium, niobium, tantalum, or mixtures thereof (as recited in Claim 17). Moreover, the addition of a group VII metal is disclosed only in conjunction with the combination of Pt-Pd with optional Rh (see *McShea* in Col. 7 lines 28-36).

Based on the teaching away of *McShea* from the use of rhodium alloy catalysts, a person of ordinary skill in the art having access to *McShea* would not be motivated to modify *McShea*'s catalyst by replacing Pd and Pt from the effective catalyst Pd-Pt-Rh combination with a second metal as recited in Claim 17, as there is no expectation to obtain the performance criteria (e.g., CO selectivity of 80% or greater) at a pressure of 2 atmospheres or more as recited in Claim 17 in order to arrive to the present claimed process covered by Claim 17.

For at least the reasons stated above, Applicant believes that Claim 17 is patentable over *McShea*. Since each of Claims 18, 21-27, 39-47 & 52-55 ultimately dependent upon independent Claim 17 carries all of the limitations of such allowable claim from which they depend, Claims 18, 21-27, 39-47 & 52-55 are considered patentable over *McShea*. Applicant respectfully requests the Examiner to withdrawn such rejection.

#### **Rejections over *McShea III* in view of *Grieve***

Claims 48-51 were rejected under 35 U.S.C 103(a) as obvious over *McShea* in view of *Grieve*. The rejection is respectfully traversed.

In this reply, Claim 48 was amended to incorporate the limitation of Claim 49 which was canceled. Applicant will thus address the rejection on Claims 48 & 50-51.

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The Examiner has used *Grieve*'s teaching about the combination of cerium with noble metals in the catalyst composition of *McShea* to reject these claims.

As stated above, neither *McShea* nor *Grieve* teach or suggest a CO selectivity of 80% or greater under operating pressure of at least greater than or equal to 2 atmospheres. Thus, the combination of *McShea* with *Grieve* does not provide all of the limitations of Claim 17. As such, independent Claim 17 is patentable over the combination of *McShea* with *Grieve*. Since each of Claims 48 & 50-51 dependent upon independent Claim 17 carries all of the limitations of such allowable independent claim, Claims 48 & 50-51 are considered patentable over the combination of *McShea* with *Grieve*.

Applicant respectfully requests the Examiner to withdrawn such rejection.

#### **Rejections over Allison**

Claims 17, 21-27, 39-47 & 52-55 were rejected under U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C 103(a) as obvious over U.S. Patent No. 6,946,114 by Allison et al (hereinafter '*Allison*'). The rejection is respectfully traversed.

The Examiner has applied *Allison* to reject such claims for its teaching of rhodium-lanthanide catalyst for the production of synthesis via catalytic partial oxidation. However, Applicant submits that *Allison* does not disclose the rhodium alloy composition as recited in currently-amended Claim 17, namely a rhodium alloy comprised of rhodium and a second metal selected from ruthenium, rhenium, niobium, tantalum, or mixtures thereof.

As such, Applicant asserts that *Allison* does not teach nor suggest each and every limitation of Claim 17, as required for a *prima facie* case of anticipation and obviousness (See MPEP 2131 & 2143.03).

For at least the reason stated above, Applicant believes that Claim 17 is patentable over *Allison*. Since each of Claims 21-27, 39-47 & 52-55 dependent upon independent Claim 17 carries all of the limitations of such allowable claim, Applicant believes that Claims 21-27, 39-47 & 52-55 are patentable over *Allison*. Applicant respectfully requests the Examiner to withdrawn such rejection.

#### **Rejections over Allison in view of Grieve**

Claims 48-51 were rejected under 35 U.S.C 103(a) as obvious over *Allison* in view of *Grieve*. The rejection is respectfully traversed.

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In this reply, Claim 48 was amended to incorporate the limitation of Claim 49 which was canceled. Applicant thus will address the rejections on Claims 48 and 50-51 both dependent from Claim 48. Claim 48 not only requires that the metal catalyst material comprises a rhodium alloy comprised of rhodium and a second metal selected from ruthenium, rhenium, niobium, tantalum, or mixtures thereof (as recited in Claim 17), but also requires a promoter comprising an element selected from the group consisting of lanthanides metal, alkali earth metals, and combinations thereof.

The Examiner has used *Grieve*'s teaching about the combination of cerium with noble metals in the catalyst composition of *Allison* to reject these claims.

As stated above, *Allison* discloses rhodium-lanthanide catalysts but fails to disclose the metal catalyst material composition as recited in Claim 17 from which Claim 48 & 50-51 depend. *Grieve* supplies a list of acceptable reformer catalyst compositions (see relevant passage in *Grieve* in Col. 10, Lines 22-26). However, an artisan having access to *Allison*'s catalyst composition and having read *Grieve* would not be motivated to modify *Allison*'s catalyst to arrive to the present catalyst of Claims 48 & 50-51 by selecting the missing element from *Grieve*'s disclosure amongst that list of acceptable reformer catalyst compositions, without some guidance from *Grieve* on how to select such element and on what the expected performance would be with the resulting catalyst composition. *Grieve* does not give any indication that some elements are more desirable or critical, and *Grieve* further does not offer any direction as to which of the many possible choices in catalyst materials is likely to be successful when combined with *Allison*'s catalyst composition. At best, the artisan may be tempted to try using one after another all of the possible catalyst materials listed in *Grieve* in combination with rhodium and a lanthanide, until one possibly would arrive at an improved result. However such 'obvious-to-try' rationale is not proper without a suggestion of such combination with a reasonable expectation of successful performance.

Applicant sees no suggestion to modify *Allison*'s catalyst for its use in synthesis gas production with the teachings of *Grieve* in terms of reformer catalysts to arrive to the present claimed process of Claims 48 & 50-51.

Applicant believes that the rejection of Claims 48 & 50-51 over the combination of *Allison* with *Grieve* is not *prima facie*, and that Claims 48 & 50-51 are patentable over such combination. Applicant respectfully requests the Examiner to withdrawn such rejection.

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**New Claims 66-67**

Applicant added new Claims 66-67 in order to cover additional embodiments of a process for producing synthesis gas to which the Applicant is entitled. Applicant believes that new Claims 66 & 67 are supported by the application as filed and do not constitute new matter. Claim 66 & 67 are supported by at least catalyst Examples 1, 2, 5-6 & 8-9; and paragraph [0033] on Page 9 of the specification as filed.

Each of new Claims 66 and 67 ultimately depends from independent Claim 17, and as such each carries all of the limitations of such claim which Applicants believes is patentable over the cited art, as explained in the remarks thereabove. Applicant submits that new Claim 66 and 67 are *a fortiori* patentable as well, and respectfully request their allowance.

**Amendments to the Specification**

Paragraph [0053] on Page 15 has been amended to correct typographical errors. The cited paragraph number originates from the specification as filed. This amendment to this paragraph is supplemental to the amendment to the same paragraph provided in the Response to Restriction Requirement dated June 30, 2006. No new matter was added by way of amendment to these paragraphs of the specification.

**Conclusion**

Applicant believes that this reply fully responds to the Office Action dated July 27, 2006. Applicant further believes that no new matter was added by way of amendments to the specification, amendments to the claims, and addition of new claims.

Applicant submits that all pending Claims 17-19, 21-27, 39-48 & 50-67 in their current form are in condition for allowance. Favorable action at the Examiner's earliest convenience is respectfully solicited.

In this Response, Applicants may have at times referred to claim limitations in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other limitations can be ignored or dismissed. The claims must be viewed as a whole, and each limitation of the claims must be considered when determining the patentability of the claims. Moreover, it should be understood that there may be other arguments and

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distinctions between the claims and the prior art, which have yet to be raised, but which may be raised in the future.

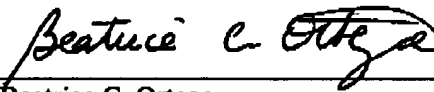
Applicant further believes that the cancellation of Claims 20 and 49 in this Response is sufficient to cover the addition of Claims 66-67, so that no additional claim fee is required. However, should any fees have been inadvertently omitted, or if any additional fees are required or have been overpaid, or in the event that an extension of time is necessary in order for this submission to be considered timely filed, the Commissioner is authorized to please appropriately charge or credit those fees to Deposit Account Number 16-1575 of ConocoPhillips Company, Houston, Texas and consider this a petition for any necessary extension of time.

If the Examiner has any questions or comments or otherwise feels it would be advantageous, the Examiner is encouraged to telephone the undersigned at (281) 293-4751.

Respectfully submitted,

CONOCOPHILLIPS COMPANY  
IP LEGAL

Date: October 24, 2006

  
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